

to conform to this section. Auxiliary lights shall be composed as follows:

(1) Two white auxiliary lights shall be placed at the front of the locomotive to form a triangle with the headlight.

(i) The auxiliary lights shall be at least 36 inches above the top of the rail, except on MU locomotives and control cab locomotives where such placement would compromise the integrity of the car body or be otherwise impractical. Auxiliary lights on such MU locomotives and control cab locomotives shall be at least 24 inches above the top of the rail.

(ii) The auxiliary lights shall be spaced at least 36 inches apart if the vertical distance from the headlight to the horizontal axis of the auxiliary lights is 60 inches or more.

(iii) The auxiliary lights shall be spaced at least 60 inches apart if the vertical distance from the headlight to the horizontal axis of the auxiliary lights is less than 60 inches.

(2) Each auxiliary light shall produce at least 200,000 candela.

(3) The auxiliary lights shall be focused horizontally within 15 degrees of the longitudinal centerline of the locomotive.

(e) Auxiliary lights required by paragraph (d) of this section may be arranged

(1) to burn steadily or

(2) flash on approach to a crossing.

If the auxiliary lights are arranged to flash;

(i) they shall flash alternately at a rate of at least 40 flashes per minute and at most 180 flashes per minute,

(ii) the railroad's operating rules shall set a standard procedure for use of flashing lights at public highway-rail grade crossings, and

(iii) the flashing feature may be activated automatically, but shall be capable of manual activation and deactivation by the locomotive engineer.

(f) Auxiliary lights required by paragraph (d) of this section shall be continuously illuminated immediately prior to and during movement of the locomotive, except as provided by railroad operating rules, timetable or special instructions, unless such exception is disapproved by FRA. A railroad may except use of auxiliary lights at a spe-

cific public highway-rail grade crossing by designating that exception in the railroad's operating rules, timetable, or a special order. Any exception from use of auxiliary lights at a specific public grade crossing can be disapproved for a stated cause by FRA's Associate Administrator for Safety or any one of FRA's Regional Administrators, after investigation by FRA and opportunity for response from the railroad.

(g) Movement of locomotives with defective auxiliary lights.

(1) A lead locomotive with only one failed auxiliary light must be repaired or switched to a trailing position before departure from the place where an initial terminal inspection is required for that train.

(2) A locomotive with only one auxiliary light that has failed after departure from an initial terminal, must be repaired not later than the next calendar inspection required by § 229.21.

(3) A lead locomotive with two failed auxiliary lights may only proceed to the next place where repairs can be made. This movement must be consistent with § 229.9.

(h) Any locomotive subject to Part 229, that was built before December 31, 1948, and that is not used regularly in commuter or intercity passenger service, shall be considered historic equipment and excepted from the requirements of paragraphs (d) through (h) of this section.

[45 FR 21109, Mar. 31, 1980, as amended at 61 FR 8887, Mar. 6, 1996]

#### § 229.127 Cab lights.

(a) Each locomotive shall have cab lights which will provide sufficient illumination for the control instruments, meters, and gauges to enable the engine crew to make accurate readings from their normal positions in the cab. These lights shall be located, constructed, and maintained so that light shines only on those parts requiring illumination and does not interfere with the crew's vision of the track and signals. Each controlling locomotive shall also have a conveniently located light that can be readily turned on and off by the persons operating the locomotive and that provides sufficient illumination for them to read train orders and timetables.

## § 229.129

(b) Cab passageways and compartments shall have adequate illumination.

### § 229.129 Audible warning device.

(a) After August 31, 1980, each lead locomotive shall be provided with an audible warning device that produces a minimum sound level of 96db(A) at 100 feet forward of the locomotive in its direction of travel. The device shall be arranged so that it can be conveniently operated from the engineer's normal position in the cab.

(b) Measurement of the sound level shall be made using a sound level meter conforming, at a minimum, to the requirements of ANSI S1.4-1971, Type 2, and set to an A-weighted slow response. While the locomotive is on level tangent track, the microphone shall be positioned 4 feet above the ground at the center line of the track, and shall be oriented with respect to the sound source in accordance with the manufacturer's recommendations.

(c) A 4dB(A) measurement tolerance is allowable for a given measurement.

### § 229.131 Sanders.

Except for MU locomotives, each locomotive shall be equipped with operable sanders that deposit sand on each rail in front of the first power operated wheel set in the direction of movement.

### § 229.133 Interim locomotive conspicuity measures—auxiliary external lights.

(a) A locomotive at the head of a train or other movement is authorized to be equipped with auxiliary external lights, additional to the headlight required by § 229.125, for the purpose of improved conspicuity. A locomotive that is equipped with auxiliary external lights in conformance with the specifications or performance standards set forth in paragraph (b) of this section on the date of issuance of a final rule that requires additional or other external lights on locomotives for improved conspicuity, as required by section 202(u) of the Federal Railroad Safety Act of 1970, shall be deemed to conform to the requirements of the final rule for four years fol-

## 49 CFR Ch. II (10-1-02 Edition)

lowing the date of issuance of that final rule.

(b) Each qualifying arrangement of auxiliary external lights shall conform to one of the following descriptions:

(1) *Ditch lights.* (i) Ditch lights shall consist of two white lights, each producing a steady beam of at least 200,000 candela, placed at the front of the locomotive, at least 36 inches above the top of the rail.

(ii) Ditch lights shall be spaced at least 36 inches apart if the vertical distance from the headlight to the horizontal axis of the ditch lights is 60 inches or more.

(iii) Ditch lights shall be spaced at least 60 inches apart if the vertical distance from the headlight to the horizontal axis of the ditch lights is less than 60 inches.

(iv) Ditch lights shall be focused horizontally within 45 degrees of the longitudinal centerline of the locomotive.

(2) *Strobe lights.* (i) Strobe lights shall consist of two white stroboscopic lights, each with "effective intensity," as defined by the Illuminating Engineering Society's Guide for Calculating the Effective Intensity of Flashing Signal Lights (November 1964), of at least 500 candela.

(ii) The flash rate of strobe lights shall be at least 40 flashes per minute and at most 180 flashes per minute.

(iii) Strobe lights shall be placed at the front of the locomotive, at least 48 inches apart, and at least 36 inches above the top of the rail.

(3) *Crossing lights.* (i) Crossing lights shall consist of two white lights, placed at the front of the locomotive, at least 36 inches above the top of the rail.

(ii) Crossing lights shall be spaced at least 36 inches apart if the vertical distance from the headlight to the horizontal axis of the ditch lights is 60 inches or more.

(iii) Crossing lights shall be spaced at least 60 inches apart if the vertical distance from the headlight to the horizontal axis of the ditch lights is less than 60 inches.

(iv) Each crossing light shall produce at least 200,000 candela, either steadily burning or alternately flashing.